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Comparative diagnostic performance of DWI combined with microcalcifications on mammography for discriminating malignant from benign BI-RADS 4 lesions with the Kaiser score

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Background: BI-RADS 4 lesions raise the possibility of malignancy that warrant further clinical and radiologic workup. This study aimed to evaluate the predictive performance of diffusion-weighted imaging (DWI) and microcalcifications on mammography for predicting malignancy of BI-RADS 4 lesions. In addition, the predictive performance of DWI combined with microcalcifications was also compared with the Kaiser score.

Methods: During January 2021 and June 2023, 144 patients with 178 BI-RADS 4 lesions underwent conventional MRI, DWI, and mammography was included. The lesions were dichotomized into benign or malignant according to the pathological results from core needle biopsy or surgical mastectomy. DWI was performed with a b value of 0 and 800s/ mm2 and analyzed using the apparent diffusion coefficient, and a Kaiser score > 4 was considered to suggest malignancy. The diagnostic performances for various diagnostic tests were evaluated with the receiver-operating characteristic (ROC) curve.

Results: The area under the curve (AUC) for DWI was significantly higher than that of the mammography (0.86

vs 0.71, P<0.001), but was comparable with that of the Kaiser score (0.86 vs 0.84, P=0.58). However, the AUC for DWI combined with mammography was significantly high than that of the Kaiser score (0.93 vs 0.84, P=0.007). The sensitivity for discriminating malignant from benign BI-RADS 4 lesions was highest at 89% for Kaiser score, but the highest specificity of 83% can be achieved with DWI combined with mammography.

Conclusion: DWI combined with microcalcifications on mammography could discriminate malignant BI-RADS 4 lesions from benign ones with a high AUC and specificity. However, Kaiser Score had a better sensitivity for discrimination.

Biography

Wangxu Xia is a highly accomplished medical professional specializing in radiology. As an Associate Chief Physician at the Department of Radiology at Chongqing Changshou People's Hospital, Xia brings years of expertise and dedication to patient care and diagnostic imaging. Xia's work is integral to the hospital's mission of providing top-tier healthcare services. Known for their commitment to precision and innovation, they play a pivotal role in advancing radiological practices within the institution and the wider medical community.